

bumble bee facts

- There are 240 describe species worldwide
- Central Asia boasts the highest diversity of bumble bees
- The western bumble bee has recently been detected in Olympic National Park, a discovery nearly 10 years in the making!
- Some bumble bee species look very similar to other bumble bees. This is called serial mimicry.



^ Female Yellow head bumble bee, *Bombus flavifrons*, foraging on rose blossom in Olympic National Park.

who are the bumble bees?

Bumble bees account for less than 1% of the some 20,000 described bee species on our planet. However, the lack of species diversity does not equate bumble bees as insignificant members of terrestrial ecosystems. On the contrary, bumble bees belong to an illustrious group of “ecosystem service” providers, the pollinators. They are a conspicuous group of bees, especially in temperate and alpine environments where they are diverse and abundant. Bumble bees are generalist foragers, that is, they have the ability to access and consume pollen and nectar from a diversity of flowering plants. Thus, a single species of bumble bee has the capacity to be a courier of pollen across many species of plants possessing a variety of flower shapes, colors, sizes and bloom periods. Despite the insurmountable evidence supporting the importance of bumble bees as pollinators, they are at great extinction risk from the effects of human growth and development.



^ Bumble bees are dependent on a diverse and abundant palette of flowering plants in the Pacific Northwest. Be careful not to disturb the blossoms, as they may be a bumble bee’s next meal. From left, clockwise, White-shouldered bumble bee (*B. appositus*), Black tail bumble bee (*B. melanopygus*), Two form bumble bee (*B. bifarius*), and Vosnesensky bumble bee (*B. vosnesenskii*).

the buzz on bee declines

Within the past 20 years, reports of bumble bee decline have accumulated on a global scale. Contemporary surveys of North American bumble bee fauna documented up to 94% decline in relative abundance of wild bumble bee populations. In parts of the Pacific Northwest, the western bumble bee, *Bombus occidentalis*, has not been detected for more than a decade. Furthermore, a high elevation bumble bee, *B. balteatus*, may be distributed in the North Cascades, but very few natural history records exist to support this claim. In consideration of the inherent ecological value of bumble bee pollinators, evaluating incidence, community composition, and genetic diversity will elucidate the health of bumble bees in the National Parks of Pacific Northwest. Today, scientists and local communities are looking for ways to sustain bumble bee health throughout Washington and Oregon.



^*Bombus occidentalis* foraging on a *Penstemon*. This species likely suffered from a population crash throughout the Pacific Northwest.



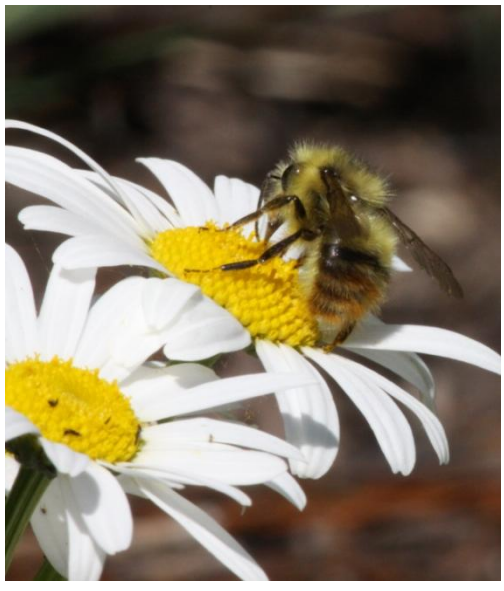
^*Bombus vosnesenskii* foraging on a blossom. Notice how full her pollen baskets (corbicula) are on her hind leg. This species is abundant throughout the Pacific Northwest.

the circle of life



^Bumble bee life cycle. Every fall reproductive bees will seek out potential mates during their mating flight. Each nest is founded by a single queen.

^Unlike female bees, males bees cannot sting. Here is a male Fuzzy horned bumble bee (*B. mixtus*) taking a sip of nectar from a daisy.



^Female Fuzzy horned bumble bee (*B. mixtus*) foraging for pollen on fireweed in Oregon.

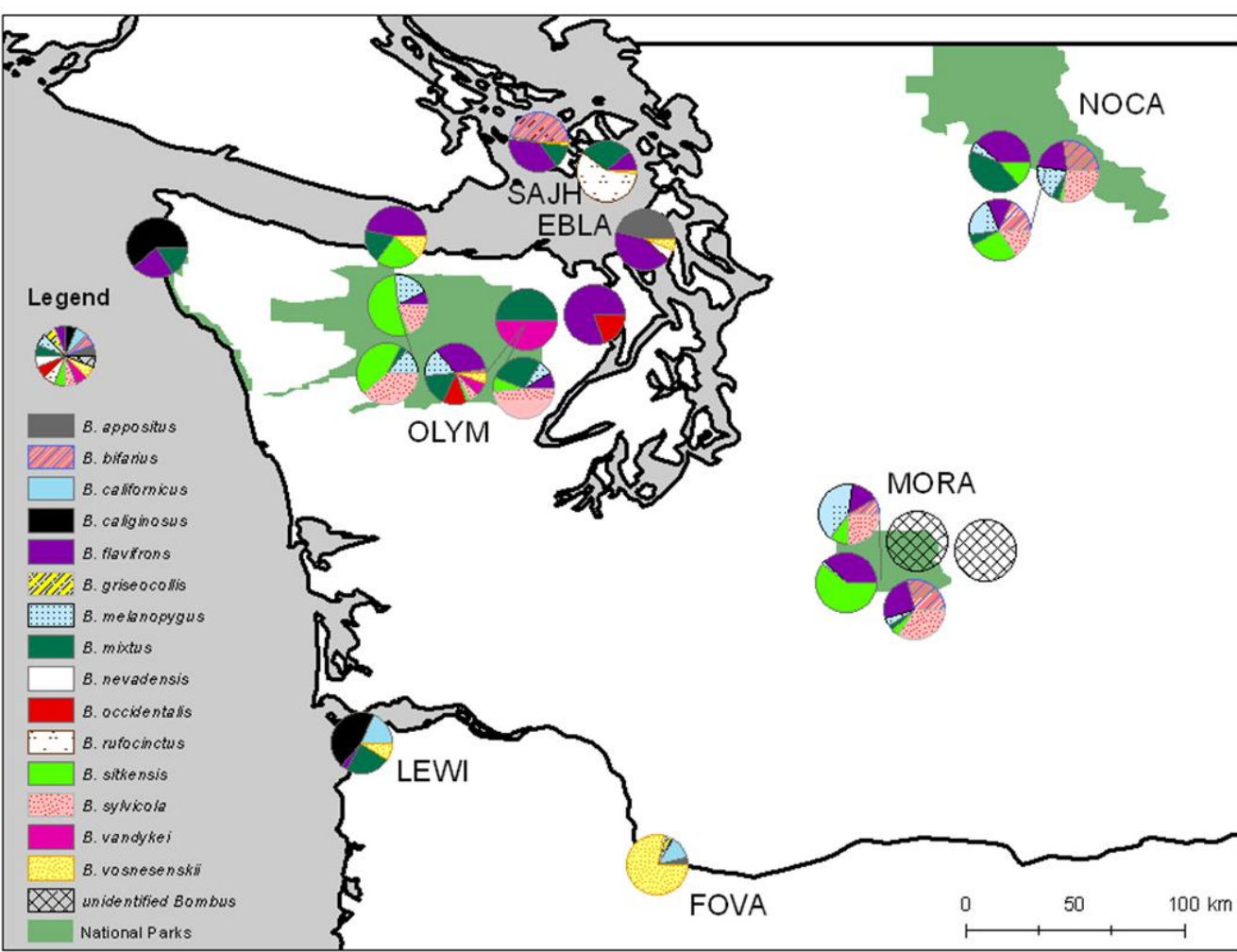




SERIAL MIMICRY Many bumble bees converge on similar color patterns on their body. From left, Vosnesensky bumble bee (*B. vosnesenskii*), van Dyke bumble bee (*B. vandykei*), Obscure bumble bee (*B. caliginosus*), California bumble bee (*B. californicus*).

research in the park

Recently, a team of bee scientists surveyed bumble bee fauna at seven Pacific Northwest National Parks. High elevation bumble bee communities had greater diversity of species, relative to low elevation communities. The team also found that bumble bee species at high elevations had lower genetic diversity than species that were distributed across a broad elevation gradient. To their delight, the team discovered a never recorded population of *B. sylvicola* in Olympic National Park. In the next 80 years, the Pacific Northwest is predicted to experience temperature increases and variable precipitation patterns, likely affecting the flowering plants that bumble bees depend on for food.



^Distribution and diversity of bumble bee communities at seven National Parks in the Pacific Northwest.

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